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 Response to Office action of March 16, 2004

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Amendments to the Specification:

The paragraph beginning at Page 1, lines 13-36, through to Page 2, lines 1-10, to be amended as follows:

Various methods, systems and apparatus relating to the present invention are disclosed in the following co-pending applications/granted patents filed by the applicant or assignee of the present invention ~~simultaneously with the present application~~ on June 30, 2000:

09/609.139 NPA014US,	9/608.970 NPA015US,	6.678.499 NPA022US,
NPA023US,	6.679.420 NPA024US,	09/663.599 NPA025US,
09/607.852 NPA026US,	NPA037US,	09/607.656 NPA038US,
09/609.132 NPA041US,	09/663.701 NPA047US,	6.720.985 NPA049US,
09/609.303 NPA050US,	09/610.095 NPA051US,	9/609.596 NPA052US,
09/693.705 NPA053US,	9/607.843 NPA063US,	09/607.605 NPA065US,
9/608.178 NPA067US,	9/609.553 NPA068US,	09/609.233 NPA069US,
9/609.149 NPA071US,	09/608.022 NPA072US,	09/609.232 NPB003US,
9/607.844 NPB004US,	6.457.883 NPB005US,	9/608.920 NPP019US,
09/607.985 PEC04US,	6.398.332 PEC05US,	6.394.573 PEC06US,
6.622.923 PEC07US		

The disclosures of these co-pending applications are incorporated herein by cross-reference. ~~Each application is temporarily identified by its docket number. This will be replaced by the corresponding USSN when available.~~

Various methods, systems and apparatus relating to the present invention are disclosed in the following co-pending applications/granted patents filed by the applicant or assignee of the present invention on 23 May 2000:

09/575.197 NPA001US,	09/575.195 NPA002US,	09/575.159 NPA004US,
09/575.132 NPA005US,	09/575.123 NPA006US,	09/575.148 NPA007US,
09/575.130 NPA008US,	09/575.165 NPA009US,	09/575.153 NPA010US,
09/575.118 NPA012US,	09/575.131 NPA016US,	09/575.116 NPA017US,
09/575.144 NPA018US,	09/575.139 NPA019US,	09/575.186 NPA020US,
6.681.045 NPA021US,	6.728.000 NPA030US,	09/575.145 NPA035US,
09/575.192 NPA048US,	09/575.181 NPA075US,	09/575.193 NPB001US,
09/575.156 NPB002US,	09/575.183 NPK002US,	09/575.160 NPK003US,
09/575.150 NPK004US,	09/575.169 NPK005US,	6.644.642 NPM001US,
6.502.614 NPM002US,	6.622.999 NPM003US,	6.669.385 NPM004US,
6.549.935 NPN001US,	09/575.187 NPP001US,	6.727.996 NPP003US,
6.591.884 NPP005US,	6.439.706 NPP006US,	09/575.196 NPP007US,
09/575.198 NPP008US,	6.290.349 NPP016US,	6.428.155 NPP017US,
09/575.146 NPP018US,	09/575.174 NPS001US,	09/575.163 NPS003US,
6.737.591 NPS020US,	09/575.154 NPT001US,	09/575.129 NPT002US,
09/575.124 NPT003US,	09/575.188 NPT004US,	09/575.189 NPX001US,
09/575.162 NPX003US,	09/575.172 NPX008US,	09/575.170 NPX011US,
09/575.171 NPX014US,	09/575.161 NPX016US,	6.428.133 H52US,

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<u>6.526.658HM52US,</u>	<u>6.315.399MJ10US,</u>	<u>6.338.548MJ11US,</u>
<u>6.540.319MJ12US,</u>	<u>6.328.431MJ13US,</u>	<u>6.328.425MJ14US,</u>
<u>09/575.127MJ15US,</u>	<u>6.383.833MJ34US,</u>	<u>6.464.332MJ47US,</u>
<u>6.390.591MJ58US,</u>	<u>09/575.152MJ62US,</u>	<u>6.328.417MJ63US,</u>
<u>6.409.323PAK04US,</u>	<u>6.281.912PAK05US,</u>	<u>6.604.810PAK06US,</u>
<u>6.318.920PAK07US,</u>	<u>6.488.422PAK08US,</u>	<u>09/575.108PEC01US,</u>
<u>09/575.109PEC02US,</u>	<u>09/575.110PEC03US</u>	

The disclosures of these co-pending applications are incorporated herein by cross-reference. Each application is temporarily identified by its docket number. This will be replaced by the corresponding USSN when available.

The paragraphs beginning at Page 9, lines 2-14, to be amended as follows:

Figure 15 is a schematic block diagram of duplexed print engine controllers and MemjetMEMJET™ (a type of inkjet) printheads associated with the printer controller shown in Figure 14;

Figure 16 is a schematic block diagram of the print engine controller shown in Figures 14 and 15;

Figure 17 is a perspective view of a single MemjetMEMJET™ (inkjet) printing element, as used in, for example, the netpage printer of Figures 10 to 12;

Figure 18 is a perspective view of a small part of an array of MemjetMEMJET™ (inkjet) printing elements;

Figure 19 is a series of perspective views illustrating the operating cycle of the MemjetMEMJET™ (inkjet) printing element shown in Figure 13;

Figure 20 is a perspective view of a short segment of a pagewidth MemjetMEMJET™ (inkjet) printhead;

The paragraph beginning at Page 11, line 3, to be amended as follows:

Note: MemjetMEMJET™ (inkjet) is a trade mark of Silverbrook Research Pty Ltd, Australia.

The paragraph beginning at Page 13, lines 5-11, to be amended as follows:

The netpage system is made considerably more convenient in the preferred embodiment by being used in conjunction with high-speed microelectromechanical system (MEMS) based inkjet (MemjetMEMJET™) (inkjet) printers. In the preferred form of this technology, relatively high-speed and high-quality printing is made more affordable to

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consumers. In its preferred form, a netpage publication has the physical characteristics of a traditional newsmagazine, such as a set of letter-size glossy pages printed in full color on both sides, bound together for easy navigation and comfortable handling.

The paragraph beginning at Page 25, lines 25-27, to be amended as follows:

The printer rasterizes and prints odd and even pages simultaneously on both sides of the sheet. It contains duplexed print engine controllers 760 and print engines utilizing MemjetMEMJET™ (inkjet) printheads 350 for this purpose.

The paragraph beginning at Page 26, line 17, to be amended as follows:

1.5.1 MemjetMEMJET™ Printheads

The paragraph beginning at Page 27, lines 8-15, to be amended as follows:

To enable to production of printers with these characteristics, the present applicant has invented a new print technology, referred to as MemjetMEMJET™ (inkjet) technology. MemjetMEMJET™ (inkjet) is a drop-on-demand inkjet technology that incorporates pagewidth printheads fabricated using microelectromechanical systems (MEMS) technology. Figure 17 shows a single printing element 300 of a MemjetMEMJET™ (inkjet) printhead. The netpage wallprinter incorporates 168960 printing elements 300 to form a 1600 dpi pagewidth duplex printer. This printer simultaneously prints cyan, magenta, yellow, black, and infrared inks as well as paper conditioner and ink fixative.

The paragraph beginning at Page 27, lines 30-31, to be amended as follows:

Figures 19(a), 19(b) and 19(c) show the operating cycle of a MemjetMEMJET™ (inkjet) printing

The paragraph beginning at Page 71, lines 9-13, to be amended as follows:

The vertically-mounted netpage wallprinter 601 is shown fully assembled in Figure 11. It prints netpages on Letter/A4 sized media using duplexed 8½" MemjetMEMJET™ (inkjet) print engines 602 and 603, as shown in Figures 12 and 12a. It uses a straight paper path with the paper 604 passing through the duplexed print engines 602 and 603 which print both sides of a sheet simultaneously, in full color and with full bleed.

The paragraphs beginning at Page 71, lines 17-29, through to Page 72, lines 1-10, to be amended as follows:

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The replaceable ink cartridge 627, shown in Figure 13 coupled with the duplexed print engines, has bladders or chambers for storing fixative, adhesive, and cyan, magenta, yellow, black and infrared inks. The cartridge also contains a micro air filter in a base molding. The micro air filter interfaces with an air pump 638 inside the printer via a hose 639. This provides filtered air to the printheads to prevent ingress of micro particles into the MemjetMEMJET™ (inkjet) printheads 350 which might otherwise clog the printhead nozzles. By incorporating the air filter within the cartridge, the operational life of the filter is effectively linked to the life of the cartridge. The ink cartridge is a fully recyclable product with a capacity for printing and gluing 3000 pages (1500 sheets).

Referring to Figure 12, the motorized media pick-up roller assembly 626 pushes the top sheet directly from the media tray past a paper sensor on the first print engine 602 into the duplexed MemjetMEMJET™ (inkjet) printhead assembly. The two MemjetMEMJET™ (inkjet) print engines 602 and 603 are mounted in an opposing in-line sequential configuration along the straight paper path. The paper 604 is drawn into the first print engine 602 by integral, powered pick-up rollers 626. The position and size of the paper 604 is sensed and full bleed printing commences. Fixative is printed simultaneously to aid drying in the shortest possible time.

The paper exits the first MemjetMEMJET™ (inkjet) print engine 602 through a set of powered exit spike wheels (aligned along the straight paper path), which act against a rubberized roller. These spike wheels contact the 'wet' printed surface and continue to feed the sheet 604 into the second MemjetMEMJET™ (inkjet) print engine 603.

The paragraph beginning at Page 73, lines 9-12, to be amended as follows:

The RIP DSPs rasterize and compress page descriptions to the netpage printer's compressed page format. Each print engine controller expands, dithers and prints page images to its associated MemjetMEMJET™ (inkjet) printhead 350 in real time (i.e. at over 30 pages per minute). The duplexed print engine controllers print both sides of a sheet simultaneously.

The paragraph beginning at Page 75, lines 6-10, to be amended as follows:

The page expansion and printing pipeline of the print engine controller 760 consists of a high speed IEEE 1394 serial interface 659, a standard JPEG decoder 763, a standard Group 4 Fax decoder 764, a custom halftoner/compositor unit 765, a custom tag encoder 766, a line loader/formatter unit 767, and a custom interface 768 to the MemjetMEMJET™ (inkjet)

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printhead 350.

The paragraph beginning at Page 75, lines 15-23, to be amended as follows:

The first stage of the pipeline expands (at 763) the JPEG-compressed contone CMYK layer, expands (at 764) the Group 4 Fax-compressed bi-level black layer, and renders (at 766) the bi-level netpage tag layer according to the tag format defined in section 1.2, all in parallel. The second stage dithers (at 765) the contone CMYK layer and composites (at 765) the bi-level black layer over the resulting bi-level CMYK layer. The resultant bi-level CMYK+IR dot data is buffered and formatted (at 767) for printing on the MemjetMEMJET™ (inkjet) printhead 350 via a set of line buffers. Most of these line buffers are stored in the off-chip DRAM. The final stage prints the six channels of bi-level dot data (including fixative) to the MemjetMEMJET™ (inkjet) printhead 350 via the printhead interface 768.

The paragraph beginning at Page 76, lines 1-7, to be amended as follows:

In the 8½" versions of the netpage printer, the two print engines each prints 30 Letter pages per minute along the long dimension of the page (11"), giving a line rate of 8.8 kHz at 1600 dpi. In the 12" versions of the netpage printer, the two print engines each prints 45 Letter pages per minute along the short dimension of the page (8½"), giving a line rate of 10.2 kHz. These line rates are well within the operating frequency of the MemjetMEMJET™ (inkjet) printhead, which in the current design exceeds 30 kHz.